July 2011

Energy Services BULLETIN

Western's monthly energy efficiency and renewable energy newsletter dedicated to customer activities and sharing information on energy services.

Midwest Energy program makes energy efficiency affordable

How$mart is a program that helps utility customers make energy-efficiency upgrades to their homes and businesses without upfront costs? Actually, that's not a question—How$mart is the name of Midwest Energy's award winning program that really does support making energy-efficient upgrades.

The program overcomes the barriers that prevent homeowners and small business owners from installing energy-efficiency measures by providing low-interest financing to pay for the measures. Customers pay off the loans through a monthly surcharge on their utility bills, a surcharge that is always less than the projected savings.

In four years, the Hays, Kan.-based cooperative has quadrupled the number of building energy audits it performs with How$mart and—more impressively—it has turned those audits into action. "We have about 600 customers participating," said Michael Volker, Energy Services director for the co-op.

The installed measures save customers an average of 1,800 kWh and 270 therms annually, or about one fifth of their electric use and one third of their natural gas use. "We look at it as saving one home's worth of electricity for every five customers on the program, and one home's worth of natural gas for every three customers," Volker said.

How$mart®

(Artwork by Midwest Energy)

Another innovation is tying the How$mart installations and surcharges to the location. This gives tenants—one of the hardest markets for energy-efficiency programs to reach—a path to reduce their energy bills. Landlords benefit from being able to offer safe, comfortable properties with lower utility bills without increasing rents or their own expenses.

New territory

The need to help this particular group of customers led Midwest Energy to create How$mart. In 2006, natural gas prices spiked, and threatened to rise more over the winter. The city of Hays, which receives a franchise fee from Midwest Energy, offered the excess fees resulting from higher fuel prices to help offset utility bills for low-income customers in Hays. The only catch: the customer had to get a free energy audit from Midwest Energy.

As so often is the case, however, those audits didn't translate into the necessary improvements, Volker recalled. "We kept going back to the same places and asking why the tenants didn't make the improvements," he said. "The answers were always the same: they didn't have the money, or the property wasn't theirs to improve."

The co-op found the answer in Pay as You Save, or PAYS, a program developed in Vermont in the late '90s. The model essentially offers the mass market the same kind of energy services that are usually available only to large commercial customers. PAYS had never been fully implemented, so Midwest Energy consulted some of the original program developers. "How$mart is the first program in the country to comprehensively apply the PAYS model voluntarily," observed Volker. "We are charting new territory."

How$mart didn't have any goals for energy savings, although Midwest Energy has done ongoing evaluation, measurement and verification. "Our only objective was to tear down the barriers to energy-efficiency improvements and give customers the chance to do what they would do anyway if the market worked differently," Volker explained. "While How$mart is an effective 'green' program, we intended it just as much to be an economic program."

Start with an audit

Whether you want to save energy or money, the first step is measurement, so participation in How$mart begins with an energy audit. A Midwest employee performs a very detailed audit that including a blower

See ENERGY PROGRAM, page 2

What's inside

Energy program

from page 1

door test and infrared inspection to determine potential savings. "Midwest has offered energy audits for years so we have our own certified auditors," Volker pointed out. "Since How$mart began, we added one more auditor, and our staff is busier than ever. They do fewer walk-through audits, now," he added.

There is no charge for the audit when the customer participates in the program. Within two weeks, the customer receives an audit report that includes a conservation plan with recommended improvements. If the customer decides not to make the recommended improvements, Midwest Energy may charge the customer $200 for the audit.

For rental property, the report is mailed to both the property owner and the Midwest Energy customer responsible for the utilities. Tenants must have the written consent of their landlord to participate in the program. Landlords must inform prospective tenants about the utility surcharge attached to properties in the How$mart program.

In the last year, Midwest Energy customers have shown more interest in thermal shell improvements, like replacing this leaky, poorly-insulated door. (Photo by Midwest Energy)

Choosing measures

Initially, most customers came to How$mart because of perceived or actual failure of their heating or air conditioning systems. But Midwest Energy's recommended improvements frequently begin with "must do" measures that pay for themselves, such as insulation. Beyond the "must dos," customers can choose additional options for a higher monthly surcharge and greater savings.

Last year, the utility tightened up its requirements for thermal shell improvements—insulation, caulking, siding, windows and doors. Volker noted that more customers are making improvements to the thermal shell: two-thirds of more recent program participants compared to one-half the participants in earlier years.

When a building is properly sealed and insulated, the HVAC system can often be sized smaller, saving on equipment costs. Because How$mart recommendations focus on giving customers the most "bang for the buck," the approved equipment may not meet the efficiency standard for a tax rebate. "Our minimum standards are 92 percent efficiency for heating and 14 SEER for air conditioning," Volker explained. "Sometimes, customers are willing to pay the extra to get the incentive. Most of the systems we've been installing lately are higher than our minimum."

The installation must be performed by a contractor the customer chooses from Midwest Energy's list of participating contractors. A contractor who is not on the list must sign a Contractor Master Agreement. The list is "easy-on, easy-off," Volker said, requiring only that the contractor agree to install the measures the utility specifies and that the installation meets code. "Sometimes there's a little pushback because contractors tend to want to oversize systems," he acknowledged, "but we've offered HVAC sizing services to contractors for years, so they usually come around. The bigger problem for customers

See ENERGY PROGRAM, page 4

Energy Services Bulletin

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Program inspires Fort Collins customers to reduce energy use

It would be great if there were some sophisticated technology utilities could use to get consumers to reduce their energy use by more than 2 percent. Until that gadget is invented, Fort Collins Utilities has found a way to get those same results using their existing meters and the old-fashioned printed page.

The northern Colorado municipal utility is eighteen months into a two-year pilot program to drive individual household energy savings by supplying consumers with regular information about their energy use. "Overall, we have been very pleased with how it works," said John Phelan, Fort Collins Energy Services manager. "In the first year, participating customers saved 4,600 MWh. That's a little better than 2 percent savings compared to customers who do not receive the report."

Knowledge is power

Partnering with energy management software company Opower, Fort Collins launched the Home Energy Reporting program in November 2009. A sampling of 25,000 Fort Collins customers received the reports at regular intervals. OPower also set up a control group of customers who received no reports to compare their energy use to the participants.

The Opower report interprets the customer's energy use in easy-to-understand terms, and provides actionable tips to reduce consumption. Customers are able to see their household use in the context of the energy used by nearby, similar-sized homes, and to see how their energy use changes across seasons.

Fort Collins has a web portal where customers can go to further analyze their home use pattern, learn more about the comparison and about energy-efficiency measures. The report and the website also offer information on the utility's other efficiency and rebate programs.

Fine-tuning

The trick to any energy-saving program is getting the customers to participate, and Fort Collins Utilities learned a few things about that from the pilot program.

Fort Collins is a college town with a high turnover in annual occupancy. This caused the program to lose about 5,000 report recipients during the first year. The utility "refreshed" its recipient database in April of this year so that 28,000 customers are now receiving the report. "We de-emphasized the university neighborhoods this time, and will be synching future customer refreshes with the typical move-in move-out seasons," said Phelan.

Initially, the reports went out on two different schedules, one quarterly and the other bi-monthly. The group receiving reports every other month responded at a higher savings rate, Phelan noted. "All participants now get their reports every other month," he said, "and in the first quarter of this year, overall energy savings are up to 3 percent."

The report itself is an important marketing tool that the utility has been refining. For example, customers prefer to see their energy use data and comparisons together on one side of the report and the energy-saving tips and program information on the other side. Because program participants pay attention to their reports, they are an excellent vehicle for promoting Fort Collins Utilities' other energy efficiency programs. "We are looking at how to better integrate program news with the report cycle, especially for seasonal programs," Phelan stated.

From Home Energy Reporting to appliance rebates to air conditioning load management to loans for efficiency upgrades, Fort Collins Utilities offers a variety of ways for customers to save energy and money. (Photo by Fort Collins Utilities)

Part of larger plan

Fort Collins Utilities has a portfolio of energy-saving programs intended to help the city meet its efficiency goal of verified program savings of 1.5 percent or 22 GWH annually.

In addition, all residential customers can get discounts on efficient lighting, receive low-cost energy and water audits and apply for rebates on several types of appliances. The utility also works with customers who want to install home generation systems and offers rebates on solar electric systems.

Although there is no "Business Energy Reporting" program as yet, the utility website offers commercial customers a number of tools they can use to track their energy use.

Businesses can take advantage of a variety of incentives and rebates for equipment tune-ups and upgrades, most provided in collaboration with Platte River Power Authority, Fort Collins' wholesale energy provider.

Big savings potential

Customer energy reporting appears to be the proverbial low-hanging fruit power that providers are just begin-

See PROGRAM INSPIRES, page 4

Energy program

from page 2

is finding a contractor, period, in western Kansas."

Handier customers may get around that obstacle by doing some of the work themselves. In that case, Midwest Energy pays for the material, but not the labor cost. "We've had customers doing caulking, insulation, even windows," said Volker.

Funding, administration

Midwest Energy launched How$mart with utility capital, but takes advantage of low-interest loan funding when available to save customers money and keep program costs down. The co-op was the first utility to partner with Efficiency Kansas, a program the Kansas Energy Office created with Recovery funding to further Midwest Energy's How$mart program and bring its benefits to parts of the state not served by Midwest Energy.

The timeframe on the investment is generally 15 years for residential customers and 10 years for non-residential customers. Midwest Energy has expanded the payback time frame for geothermal heat pump systems for residential customers. Although How$mart does not cover residential lighting upgrades, commercial customers can now get loans for efficient lighting.

Another change in the program had to do with transferring the surcharge to a new customer. Participants must notify tenants or home buyers when the property changes hands that the new occupant is responsible for the How$mart surcharge on the utility bill. "Originally, we just put that requirement in the program contract, but we found that the information was not being shared," said Volker.

How$mart participants now file a lien on their properties, so that an explanation of the surcharge shows up in the title search. "It's an administrative headache," Volker admitted, "but it is absolutely worth it."

Midwest Energy has shown that going the extra mile for customers is just the smart way to do business, and industry peers agree. The Association of Energy Services Professionals (AESP) named How$mart the 2010 Outstanding Achievement in Energy Program Design or Implementation at its national conference in January.

This is the fourth national award or recognition that the program has received since its inception in 2007. In addition to the AESP award, the program was named a 2008 "Utility Best Practice" by Chartwells. The Environmental Defense Fund recognized the program in 2009 in its annual "Innovations Review" as a compelling environmental innovation in business. Most recently, Midwest Energy received the Appogee 2010 Customer Excellence award for environmental stewardship.

To Volker, however, How$mart is less an innovation than a line extension. "Midwest Energy is just taking its service beyond the meter."

For links to more resources,
visit www.wapa.gov/es/pubs/esb/2011/jul/jul111.htm

Program inspires

from page 3

ning to pick. The Environmental Defense Fund (EDF) recently released a major study analyzing the impact of information-based energy-efficiency programs at 11 utilities across the country, including Fort Collins Utilities. The participating utilities partnered with Opower to share energy use information with more than 750,000 households over a minimum of 12 months. On a national basis, individual household savings ranged from an average of 1 to 3 percent per year.

According to the EDF report, those energy reductions could generate billions in savings for Americans and reduce carbon dioxide emissions by more than 8.9 million metric tons per year if extended nationwide. A separate Opower analysis estimated that Fort Collins' 2.1 percent reduction alone resulted in more than $600,000 in (gross) customer savings. This is equivalent to taking 662 homes off the grid, or 854 cars off of the road.

There is no silver bullet that will deliver all the energy savings a utility needs to meet its efficiency goals, but Fort Collins Utilities has discovered that a little information can make a big difference in customer behavior. And the tools that can make the change happen are here now.

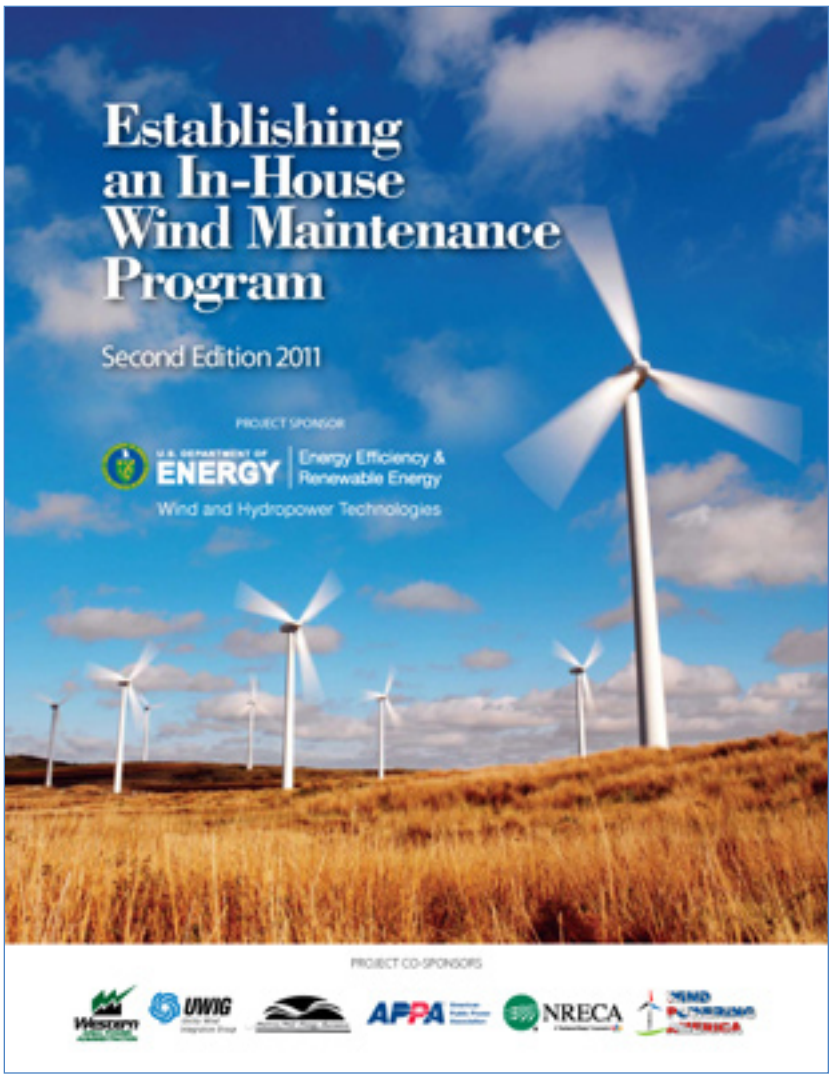
For links to more resources,
visit www.wapa.gov/es/pubs/esb/2011/junl/jul112.htm

AWEA reaches out to utilities at annual conference

While it was clear at WINDPOWER 2011, May 22 to 25 in Anaheim, Calif., that wind energy has arrived as a mainstream industry, the utility industry's experience with wind still varies as much as, well, utilities vary from each other.

Some power providers have yet to figure out how to add wind to their portfolios, while others must figure out what to do when their maintenance contracts with developers come to an end. The American Wind Energy Association (AWEA) knows that its utility members all occupy different places on the learning curve, and the conference's utility session track reflected that.

The thread that unites most of the utilities attending the conference is the need to add more wind to meet state renewable goals and standards. Even in states where there are no requirements, consumers are putting more pressure on utilities to green their power supply.



AWEA Utility Working Group members were invited to share their experiences with maintaining utility-owned wind facilities for the 2011 edition of Establishing an In-house Wind Maintenance Program.

Considering contracts

For many utilities, long-term power purchase agreements (PPAs) with wind developers are still the most cost-effective way to acquire wind generation. Fittingly, the utility track's opening session covered Long-Term Wind Power Contracts and State Policies. The panel used long-term contract initiatives in various states to discuss the needs and expectations of the different parties.

Public utility commissions' ability to approve PPAs varies from state to state. States with pre-approval policies, such as Oklahoma, Michigan, West Virginia and Indiana, seem to have more success developing projects. Speaker Jay Godfrey of American Electric Power noted that of those states, only Michigan has an RPS.

Observing that project cost recovery is a top priority for both financers and utilities, Godfrey stated that assured cost recovery was necessary if utilities are to reach the renewables goals being set for them. To establish that kind of certainty, he concluded, the renewable industry, utilities, regulators and state legislators must strengthen their working relationship.

Integrated resource plans (IRPs) help manage uncertainty by identifying risk, reducing exposure to uncertainty, keeping options open and minimizing surprises. Speaker Mark Cooper of Vermont Law School insisted that long-term contracts for smaller increments of renewable generation are better for diversifying the resource base, lowering costs and reducing risk to ratepayers. "Diversity is the greatest insurance," he declared.

In spite of differences on some points, Cooper and Godfrey concurred that past strategies for utility resource planning no longer work in the current economic climate. Cooper believes that utilities should con-

See AWEA CONFERENCE, page 6

AWEA conference

from page 5

tinue their commitment to least-cost planning, but warned that short-term cost is not the best basis for risk assessment. Godfrey added that strong public policy must be based not only on today's concerns but tomorrow's needs, especially in regard to energy.

Just the beginning…

Utility Resource Planning: How Utilities Are Adding Wind Power and Utility Strategies for Wind Power - Case Studies delved into the more day-to-day, operational challenges of integrating more wind into a utility's power mix. Speakers in the first session covered such topics as wind project capacity factors and availability, capacity values of wind energy, use of pre-paid PPAs and wind power's role in IRPs. The case studies session brought together utility wind power leaders to discuss the business impacts of PPAs versus ownership, approaches to operations and maintenance (O&M) and best practices.

Among the standout presentations were a concise explanation of PPAs, an overview of how one California utility is meeting the state's renewable energy mandate and a discussion of how the grid fits into resource planning.

David Lowman, a partner with Hunton & Williams LLP, talked about structuring PPAs to meet tax requirements. Contracts benefit publicly-owned utilities by locking in long-term supply, and benefit developers by providing them credit, which keeps prices down.

Southern California Edison (SCE) delivers 19.4 percent of its power with renewable resources, just short of the state's renewable energy goal of 20 percent by 2010. The fact that most of that power is generated at night is driving SCE to explore new ideas for managing its load, including electric vehicles, load-shifting smart meters, storage and nighttime load growth.

To expand their use of wind power, communities and companies like SCE will need a grid that is able to balance wind's contribution to the energy mix with customer demand and other generation sources. Dr. Lawrence Jones, Alstom Grid's regulatory affairs director, acknowledged that wind's intermittency still poses real challenges to managing the flow of power across the grid. A study Dr. Jones conducted on behalf of the U.S. Department of Energy aimed at developing best practices to streamline the operation of new wind projects will be out later this summer.

Ongoing concerns

As comprehensive as the utility track sessions were, a few hours could only scratch the surface of issues utilities now confront on a regular basis. Power providers looking for guidance, support and a voice in shaping the wind industry's future should consider joining AWEA's Utility Working Group.

During WINDPOWER 2011, the group held a meeting to discuss pressing issues that affect utility members. High on the list of concerns was the recent release of the Fish and Wildlife Service's draft Voluntary, Land-Based Wind Energy Guidelines and draft Eagle Conservation Plan Guidance. AWEA estimates that FWS' Golden Eagle policy alone threatens some 34 GW of potential wind development needed to meet RPS requirements. The industry must figure out how to move projects forward in the interim. With siting issues looming large, the Utility Working Group is seeking new members for its siting committee.

On the positive side, HR 4599, the Renewable Energy Expansion Act of 2010, introduced by conference speaker Rep. Earl Blumenauer (D-Ore.), could be a boost to development. The bill provides a tax-based incentive that is intended to run parallel to the production tax credit.

Also on the agenda was a discussion about utility ownership of wind facilities and the O&M challenges that come with the end of original equipment manufacturer agreements. Randy Manion, Western's Renewable Energy Program manager, talked about updating the O&M guidebook for utilities, Establishing an In-house Wind Maintenance Program. Utility Working Group members can still contribute their experiences and concerns to the next edition by contacting Manion.

Attendees also got an update on the working group's recent and upcoming activities. Starting in the second quarter of 2011, AWEA launched a special quarterly "Utility Briefing" for its highest level utility members. The Wind Energy Fall Symposium, Nov. 2 to 4 in Carlsbad, Calif., will have a special utility focus this year. The next meeting of the utility working group is also scheduled at the event. AWEA is making a utility library available to members on its website, and has budgeted for more research and report writing next year. The working group would also like input about how to facilitate sharing best practices between utility members.

AWEA utility members can keep up with the issues year around by participating in the working group's monthly webcasts. The online events focus on such topics as transmission and wind power, wind integration and the costs of wind energy. Members are encouraged to submit suggestions (to whom) for future webcasts.

To learn more about AWEA member benefits and activities, contact the membership department or 202-383-2500.

For links to more resources,
visit www.wapa.gov/es/pubs/esb/2011/jul/jul113.htm

ask the energy experts

Many considerations, no single answer for choosing control system

Question:

Can you provide information on selecting an energy management control system (EMCS) for new construction, specifically barracks and administrative buildings? What are the pros and cons of these systems? Currently, we are using data loggers to monitor energy use.

Answer:

Data loggers are primarily metering devices for monitoring load and energy use, with interface capability to a computer network for data collection. They provide information about use, but don't control any systems.

Energy management control systems give the operator the ability to control various energy systems via computer programming that responds to input data gathered at the site. The owner needs to ask the following questions before selecting a control system:

- What functions or features are desired? What do you want to control? Do you want to control air/water flow, air/water temperature, humidity, indoor air quality, damper or valve position, time scheduling or system protection (e.g. prevent coil freezing)?
- What control sequences do you need? Economizer cycle, optimum start/stop, variable air volume control, night setback, chiller optimization, demand control, duty cycling, water temperature reset, zone control, etc.?
- What systems are to be controlled? What sensors are needed to provide the data necessary to control specific devices (air and water temperature, CO2, humidity, motion)? Do you want to include HVAC, lighting and fire alarms? Think about which equipment or systems you want to control, including fans, boilers, compressors, pumps, lights, alarms, etc. Then consider what data you want gathered and for which systems, specifically kWh, peak kW, hours on/off.

  Also, do you want a stand-alone system, or a system integrated to control or monitor from a central location? Do you need to communicate with other, existing systems?
- What about maintenance capabilities? Do you have on-site staff who can monitor and interpret the data? Do you have staff who can respond to system alarms? Do you have employees who can interface with the computer and program changes as needed, or do you need outside support or extensive staff training?

Pros, cons of systems

There are few system comparisons, as technology is always changing and the system that may be perfect for one application may not be good for another. The most important criterion for selecting a system is how well the system meets your specific needs, particularly after it is installed. All the systems are capable of many functions, but designing the system to precisely fit your needs and capabilities—without grossly over-designing it or providing inadequate control—is critical to the success of the installation.

Fortunately, you have the choice of many control system and component manufacturers, including:

- Alerton Technologies
- Honeywell Automation and Control Solutions
- TAC
- Johnson Controls, Inc.
- Siemens
- Teletrol Systems, Inc.

Recommendations

- Define needs: It is important that you clearly define your needs before selecting a system.
- Call those in the business: Contact at least three manufacturers to get their recommendation for the equipment that would meet your specific requirements.
- Talk to others using the system: Get references from each potential installer, visit a site where the system has been installed and ask lots of questions!
- Make sure it's compatible: It is increasingly important that new systems have open protocol so that compatibility issues don't cause problems in the future or limit flexibility in a competitive market.

For links to more resources, visit www.wapa.gov/es/pubs/esb/2011/jul/jul114.htm

Website of the month:

Saving energy with your smart phone

Online is "so last week"—consumers are relying increasingly on mobile devices like smart phones, iPhones and iPads for the information they "used to" get from the Internet. Mobile applications, or apps, are nudging search engines aside as the tools people use for everything from finding a good Thai restaurant to detecting nearby ghosts (seriously). So naturally, there's an app for saving energy—quite a few, in fact—and utilities should get familiar with these opportunities to influence consumer decision-making.

Free lighting apps

Seizing the hot topic of new lighting efficiency standards, Light Bulb Finder helps users find energy-saving bulbs with the right fit, light quality and performance for their homes. The app is a free download for Androids, iPhones, iPod Touch or iPad.

Users plug in their zip code to get the electricity rate in their area, or savvy consumers can fill in their own rate. The next step is to go through each light fixture in the house and select the fixture type from a graphic interface, select the bulb type and enter some use data. Light Bulb Finder then produces a list of replacement bulbs along with calculations for how much money the consumer will save by swapping out their conventional bulbs for the efficient version.

Because Light Bulb Finder is the creation of energy-efficiency marketer EcoHatchery, the list includes the company's products, which the user can buy online. However, a wise consumer may want to download the list of bulbs to the mobile device and then go shopping. Less expensive bulbs will have a shorter payback period.

Electronics manufacturer Philips offers another free lighting app dedicated to LEDs that allows users to calculate the annual savings from installing the super-efficient lights. Given the minor .5 to 1-kW difference in energy use between LEDs and CFLs, the PhilipsLED Savings Calculator could also calculate the savings for CFLs. The user would just have to adjust for the difference in lifespan—manufacturers claim 75,000 hours for the LED to the CFL's 10,000 to 12,000 hours—to get the payback period. Users must calculate the payback period themselves with the app. Also, like the Lighting Bulb Finder, the LED Calculator promotes Philips products.

Calculate, educate

WellHome, another energy-efficiency company, compiled a list of apps that can help users reduce energy use and save money, mostly by calculating consumption or by providing daily tips.

Applications like GoodGuide or Green Genie steer consumers to environmentally-friendly products and services. MyEnergyTips and Meter Readings can turn users into home energy management specialists with energy-saving suggestions and calculators to help them track their progress.

While consumers are the intended market for these apps, some could be very useful to utilities. Kill-O-Watts, for example, uses the electrical properties and use habits for appliances to determine how many kilowatts-hours they consume and how much they cost to run on a monthly and yearly basis. Imagine how that might help a member services representative trying to show customers the value of an appliance upgrade.

Future opportunities

On the commercial side, HVAC and lighting controls and whole-building automation systems that interface with smart phones as well as computers are now fairly commonplace. Key account managers should be aware of those options when making recommendations to large industrial customers.

Although the technology has been available for several years, home automation is still not as widespread as its industrial counterpart. However, homeowners are increasingly installing wireless controls for lighting, appliances, electronics and more. Utilities might want to consider how smart phone applications could be integrated with their time-of-use rate and demand-side management programs.

As smart grid upgrades are deployed, utilities will find even more opportunities to marry the two "smart" technologies to improve customer service and more effectively manage load. Start your research with a visit to the iPhone App Store and the Android Market, and don't forget to share your ideas with Western's Energy Services. We are always looking for smarter ways to do business.

Visit Breaking News at **http://esnews.wapa.gov/wordpress** for the latest news.

For links to more resources, visit www.wapa.gov/es/pubs/esb/2011/jul/jul115.htm